



# Broadcasting and Interactivity

## - Access Services for all -

***2nd European Conference Media4D  
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## (Barrier-free) Access for All

### The need for accessibility services

- HbbTV – an open ETSI Standard
- What broadcasters can do
- Cooperation is necessary between broadcasters and CE manufacturers

### My messages:

Whatever access system we offer, it will be of benefit to us all (sign language may be the only exception).

Connected TV is a marvellous new possibility for  
Audiovisual Media Accessibility.



## HbbTV (Hybrid Broadcast Broadband TV) – An Open ETSI Standard

- The HbbTV consortium together with a large group of supporters jointly developed the HbbTV specification to create a global standard for hybrid entertainment services
- Current version: ETSI TS 102 796 v1.2.1 (November 2012)  
First ETSI standard (version 1.0) in June 2010
- Work ongoing towards version 2.0  
(with support of the EU project HBB-NEXT)
- All references under [www.hbbtv.org](http://www.hbbtv.org)
- The HbbTV specification does not depend on a particular broadcast link nor on a particular IP link. It may be applicable with either or connection, but gains most momentum in a connected environment to broadcast and broadband



<http://www.hbb-next.eu/>

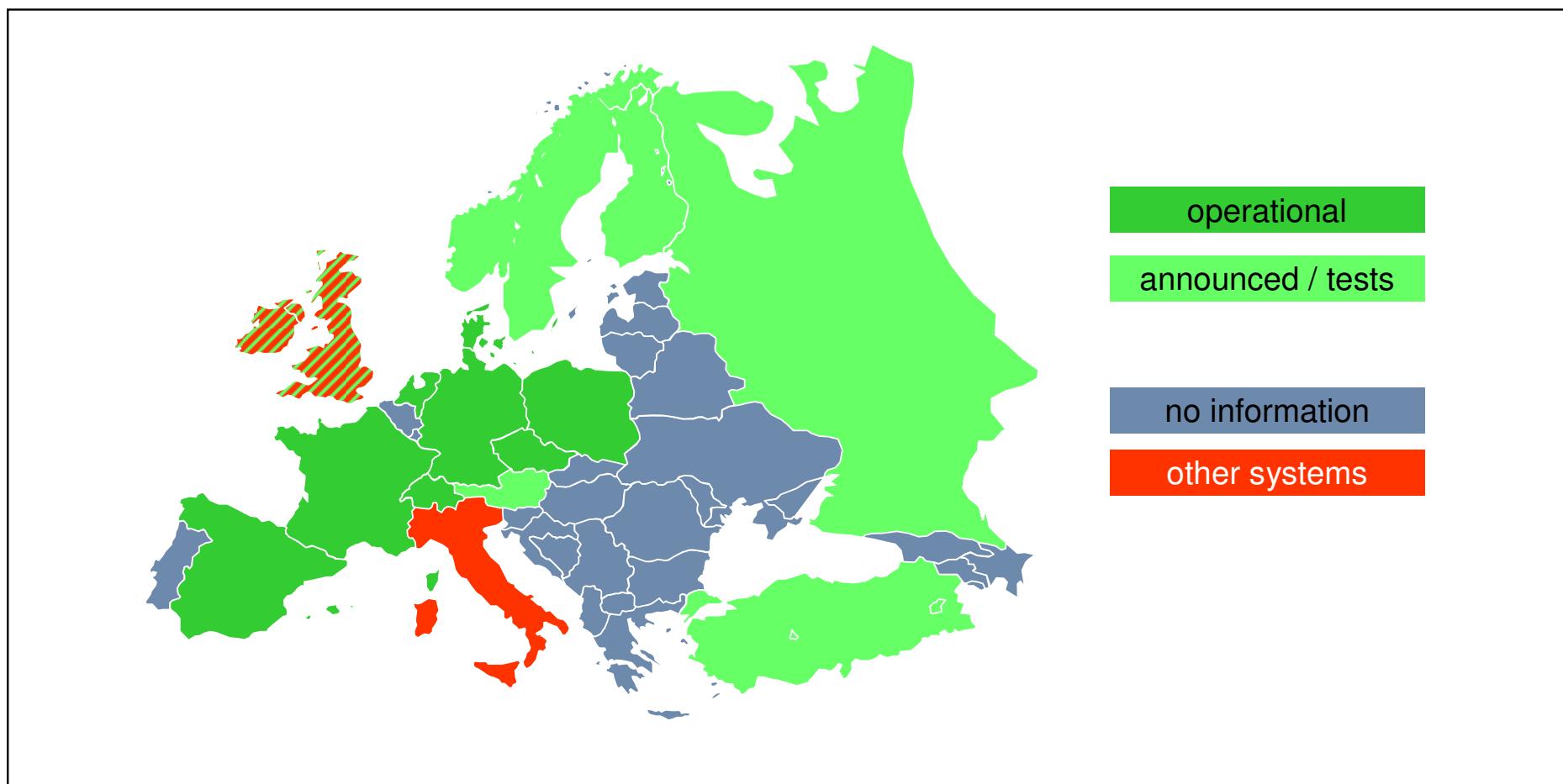
## HbbTV – A broadcast-centric solution for Connected TV

- Open and business neutral technology platform
- Seamlessly combines TV broadcast services with services delivered via broadband
- Enables access to Internet-only services for consumers using connected TVs and set-top boxes
- The HbbTV specification is based on existing standards and web technologies including OIPF (Open IPTV Forum), CEA, DVB and W3C
- The standard provides the features and functionality required to provide feature rich broadcast and internet services
  - Rapid application development owing to utilizing standard Internet technology
- HbbTV defines minimum requirements simplifying the implementation in devices and leaving room for differentiation, this limits the investment required by CE manufacturers to build compliant devices.

## Companies offering HbbTV devices in Germany



## European Countries with HbbTV services



## HbbTV is simple to provide and simple to use

- **Signalled in the DVB**
  - If signalled in the DVB stream, the “**RED BUTTON**” function is available
  - Click on it and the start page appears that provides access to all services offered by the broadcaster or by a group of collaborating broadcasters
  - HbbTV can also be applied in connection with **DVB Radio services**
- **HbbTV fulfills all broadcasters' requirements**
  - Open, standardised, functionally flexible due to JavaScript engine, cross-linking options TV - Web, minimum dependency from device portals / maximum control over usage of own TV signal, potential for value apps, ...
- **HbbTV allows very easy content generation**
  - High synergy with current web technology (**HTML-based, CE-browser**)

# Examples of using HbbTV

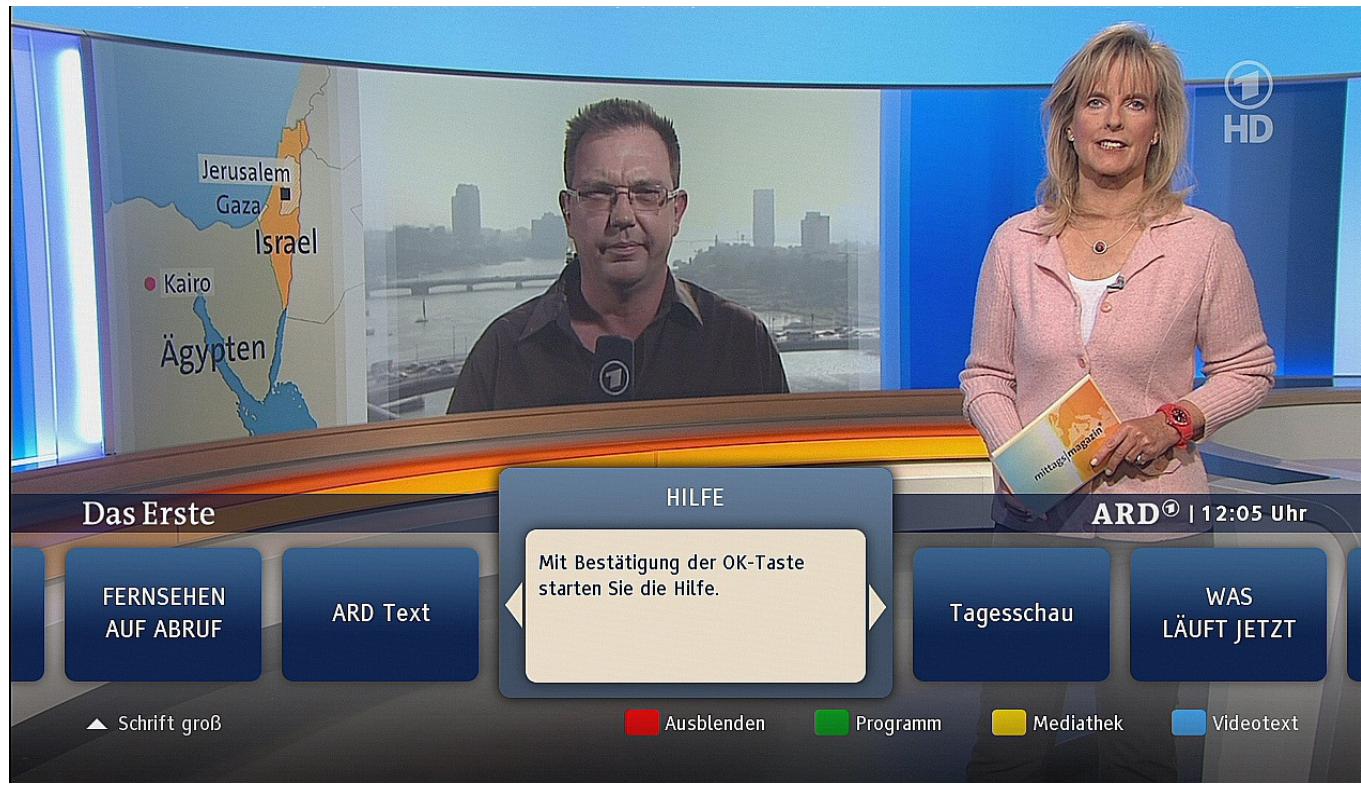
## The RED BUTTON function



When selecting a TV programme, the „RED BUTTON“ signals possible access to HbbTV services

# Examples of using HbbTV

## Launcher application at the first national programme



After pushing the RED BUTTON on the remote control the START PAGE appears

# Examples of using HbbTV

## Application of Electronic Programme Guide



Selecting the EGP gives direct access to catch-up TV (if emission has already passed)

# Examples of using HbbTV

## Application of Extended Text Service

The screenshot shows a television screen displaying an HbbTV menu. On the left, there is a vertical navigation bar with the title "ARD® Text". The menu items listed are:

Start	100
Nachrichten	101
Sport	200
Wetter	170
Kultur	400
Wissen	500
Ratgeber	530
Börse	710
Inhalt A-Z	790
Hilfe	
Einstellungen	

The main content area shows a list of news items under the "Nachrichten" section:

Startseite	100
Nachrichten	
Nahost: Waffenruhe hält weitgehend	106
Schulz warnt vor Etat-Populismus	108
Letzte "FTD" wohl am 7. Dezember	115
Sport	
CL: BVB und S04 im Achtelfinale	212
Brasilien gewinnt Superclasico	227
Arriens neuer Davis-Cup-Teamchef	229
NBA: Mavericks mit 7. Saisonsieg	611
Aktuelle Themen	
ARD-Themenwoche: Leben mit dem Tod	801

On the right side of the screen, there is a video player showing a speech by Barack Obama. Below the video, there is a "Programmtipp" section featuring a golden deer statue.

At the bottom of the screen, there is a navigation bar with the following buttons: Startleiste (0), Ausblenden, Programm (highlighted in green), Mediathek, and Videotext.

Selecting ARD Text provides access to an enhanced type of Videotext

# Using HbbTV for barrier-free TV

## Adapting the Text Services

ARD® Text

Seite [ ]

Start	100
Nachrichten	112
Sport	200
Wetter	170
Wirtschaft	700
Kultur	4
Ratgeber	530
Programm	300
Inhalt A-Z	102
Hilfe	
Einstellungen	

Einstellungen

Hier haben Sie die Möglichkeit, die Darstellung des ARD Textes Ihren Wünschen anzupassen. Sie können unter verschiedenen Ansichten, Farbkombinationen und Schriftgrößen wählen. Bestätigen Sie Ihre Auswahl mit OK. Die Auswahl wird sofort wirksam. Änderungen können Sie jederzeit im Menüpunkt "Einstellungen" vornehmen.

Schriftgröße:

Normal

Größer

Darstellung

Transparent / TV-Bild im Hintergrund

Vollbild / TV-Bild als Mini-Ansicht

Mini-Ansicht / TV-Bild im Hintergrund

Ausblenden Programm Mediathek Einstellungen ARD Start: 0

in size

Das Erste

Jetzt im Ersten  
12:15  
ARD-Buffet

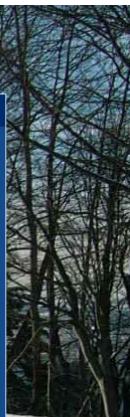
13:00  
ZDF-Mittagsmagazin

Programmtipp

01

08.07.2010, 22:45  
Dan - Mitten im Leben!

Ausblenden Programm Mediathek Einstellungen ARD Start: 0



Text

01

100  
112  
200  
170  
700  
400  
530

Programm  
Inhalt A-Z  
Hilfe  
Einstellungen

Startleiste 0

Nachrichten Kultur 09.09.2010, 10:40 Das Erste

Deutscher Buchpreis: Sechs Bewerber

Die Jury hat sich entschieden: Die sechs Finalisten für den Deutschen Buchpreis 2010 stehen fest. Es sind Jan Faktor, Thomas Lehr, Melinda Nadj Abonji, Doron Rabinovici, Peter Wawerzinek und Judith Zander.

Man sei sich nicht immer einig gewesen, sagte Jurysprecherin Julia Encke von der Frankfurter Allgemeinen. Die Gemeinsamkeit ▲ vorige Meldung weiter ▼

Ausblenden Programm Mediathek Einstellungen

in colour

# Using HbbTV for barrier-free TV



Diese Sendung gibt es mit Gebärdensprach-Dolmetscher über das Internet.

JETZT EINSCHALTEN?

JA

NEIN

**Announcement of sign language service**

## Sign language on Command

Demo at IFA-10 – could be applied in practice  
(synchronization still to be implemented in the specification)

**News via broadcast – signer via Internet**



# Using HbbTV for barrier-free TV



Selection of personally adjustable subtitles

## Subtitles on Command

Demo at IFA-12 – could be applied in practice  
(synchronization still to be implemented in the specification)

Menu to select size, appearance and position of subtitles



# Second Screen for barrier-free TV

## Use of HbbTV in combination with a 2nd Screen The demo at IFA-12

**rbbtext<sup>®</sup> HD**  
03.09.2012 | 12:34 Uhr

**Startseite**

- Nachrichten regional
- tagesschau
- Wetter
- Sport
- IFA Berlin
- Verkehr
- Alles auf einen Blick
- Geräte verbunden**

**Nachrichten**

- Ärzte brechen Verhandlungen ab
- BER-Schallschutz: Erneute Klage
- Dienstag wieder Lufthansa-Streik
- Besucheransturm bei der IFA
- Zossen: Brandstifter in Berufung
- CDU-Landtagsfraktion in Klausur
- Pflegedienste demonstrieren
- Parkeisenbahn: Vorwurf geleugnet

**Wetter heute**

Vorhersage heute (MeteoGroup)

Aussichten (5 Tage)

Temperaturen

Berlin fast wolkenlos 21°C

**Fußball Bundesliga**

Hilfe & Tipps zu rbbtext HD

**Jetzt im Programm**

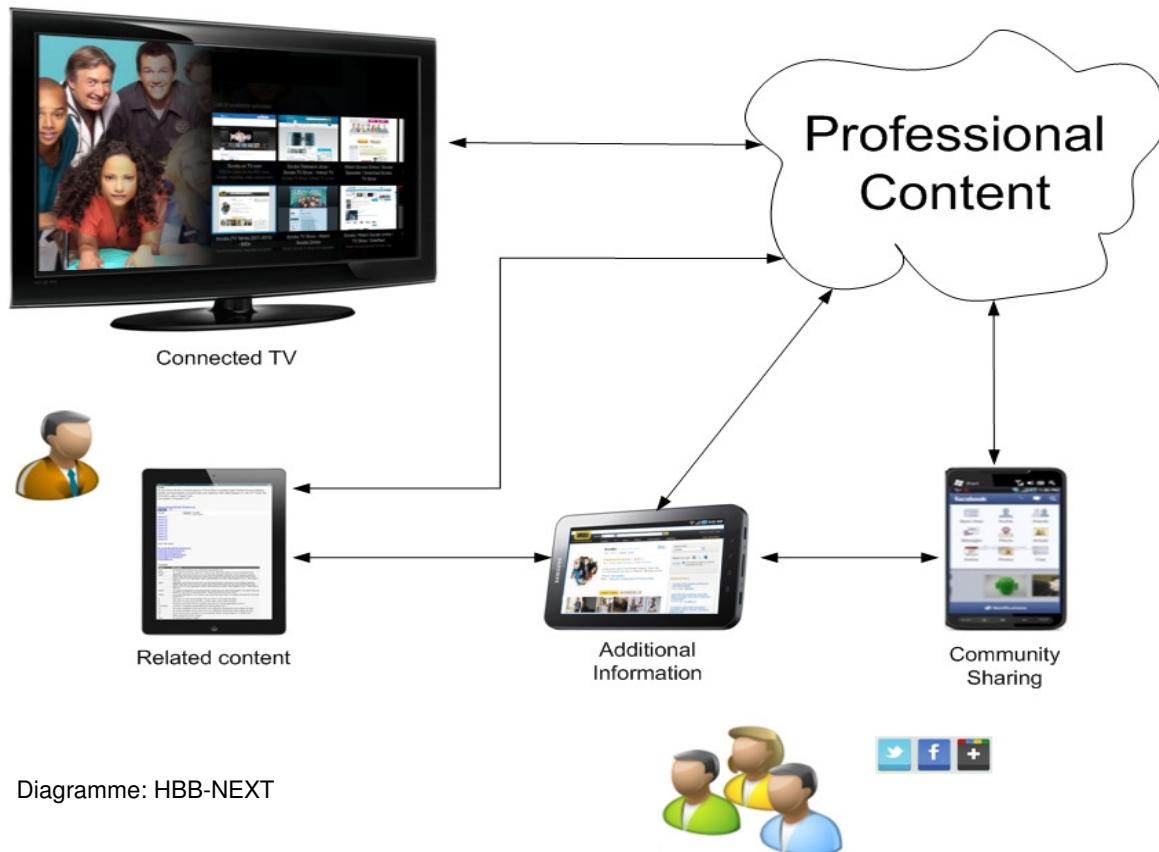
- 12.10 Rote Rosen
- 13.00 rbb AKTUELL
- 13.05 Schloss Einstein

Startliste 0 Hilfe 1 Ausblenden Programm Mediathek

Signalling of 2nd  
Screen support

# Second Screen for barrier-free TV

## Use of HbbTV in combination with a 2nd Screen The principle



**Any display device that allows connection to Internet can be used**



# IRT development: Generic 2nd Screen framework

## The Generic 2nd Screen framework

- allows generic device coupling of TV and 2nd screen
- one time coupling can be used by many services
- provides communication path between TV application and 2nd Screen
- easy to use for all kinds of applications
- developed within EU funded project



## FI-CONTENT

„Future media Internet for large-scale  
**CONTent experimENTation**“

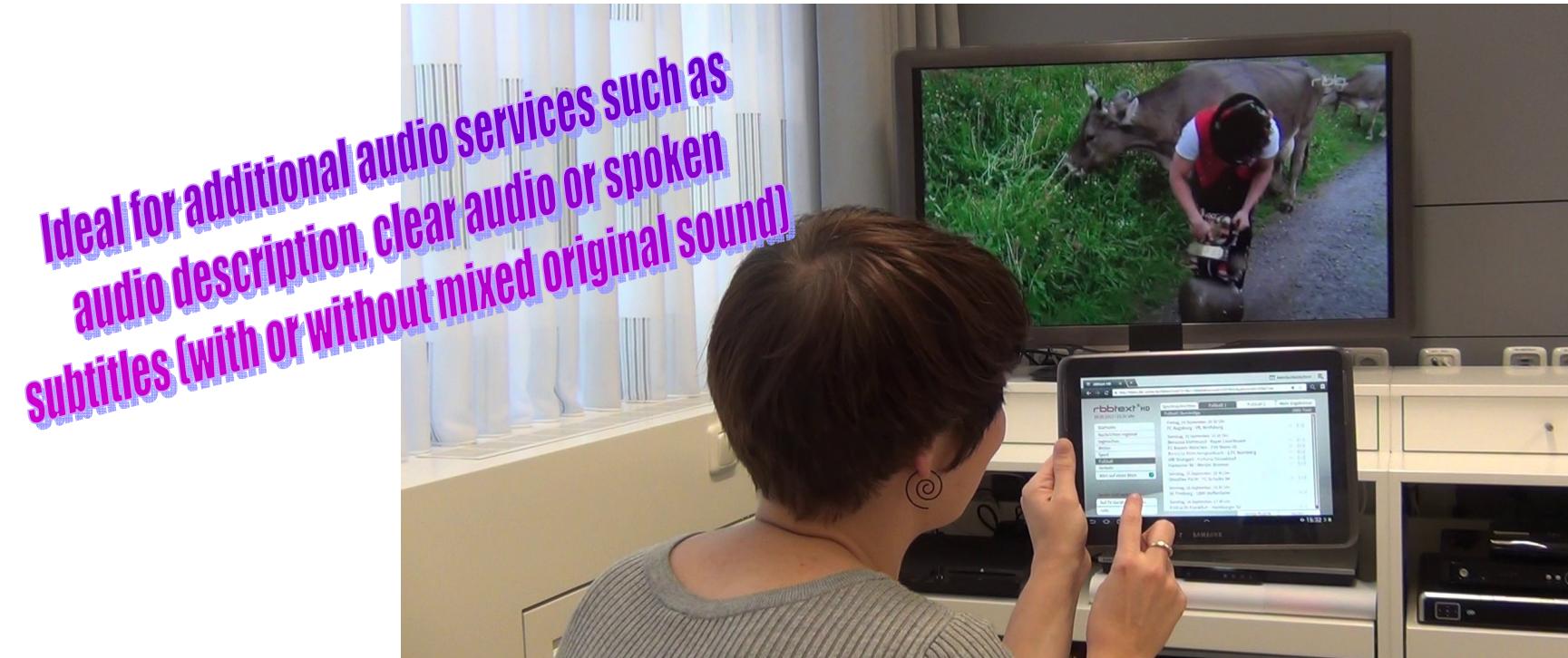


<http://www.fi-ppp.eu/about-us/projects/fi-content/>



# IRT development: Generic 2nd Screen framework

IFA 2012 demo in cooperation with rbb

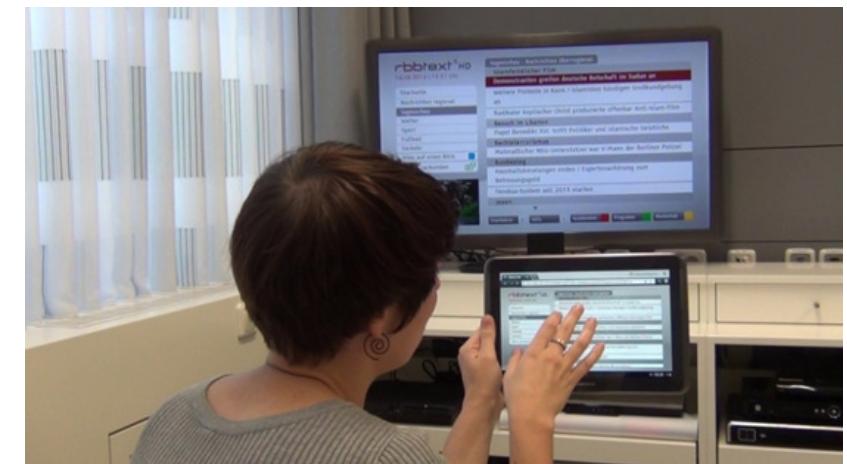


Via the tablet the TV application can be made invisible

## What broadcasters can do

- Provision of access services
  - Open: Visible/audible by all end-users
  - Closed: Only visible/audible when selected
- Production of access services
  - Pre-production as possible
  - Live as needed
  - Pre-produced / live (mixed)
- Transport
  - Within the broadcast signal
  - Via the Internet (“HbbTV”) to a Connected TV set or a second screen, or both mixed

Photo: IRT





# Access to Television for people with HEARING disabilities (1)

## Closed Subtitles

- Displayed on command
- Separate data stream in broadcast signal, or
- Retrieved via the (mobile) broadband network (Internet)
- Same language as original, or translation into language of target country
- Live subtitles through re-speaking



**Subtitles adjusted according to user profiles – Parameters relate to size, appearance and position of subtitles**  
(Photo courtesy rbb)

## Closed Signer

- Separate video stream
- Sign language interpretation is not universal – there are country variants (automatic translation not yet solved)
- Separate data stream in broadcast signal, or
- Retrieved via the (mobile) broadband network (Internet)



NOTE: Avatar solutions are under development but people prefer “real persons”



Source of image: NHK

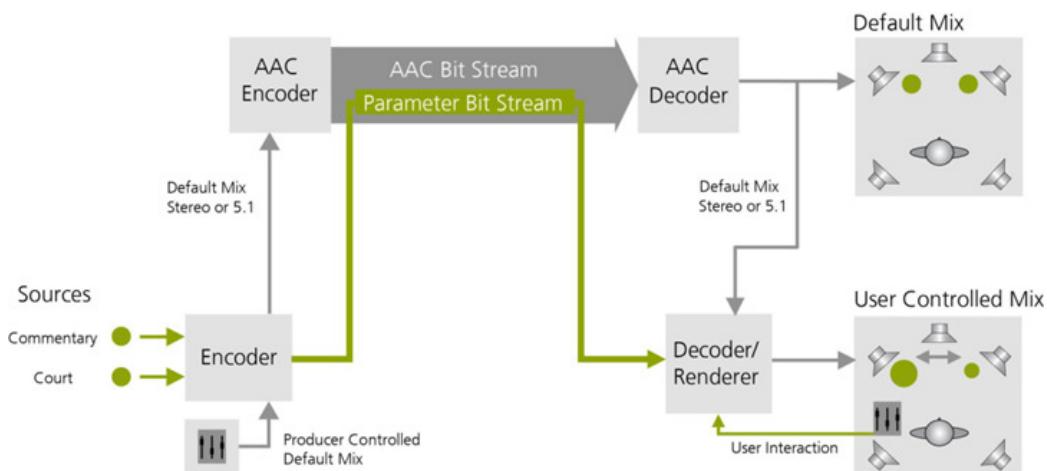
Example of a signer video delivered via the Internet –  
The signer video is superimposed with the main broadcast video  
(Photo courtesy IRT and rbb)



# Access to Television for people with HEARING disabilities (3)

## Clean Audio

- Augmentation of the loudness for the moderator's voice (within predetermined limits)
- Adjustable by the end-user
- Solutions compatible with existing TV sets are on the horizon



**Example for Dialogue Enhancement**  
(diagram courtesy of FhG IIS)

## Audio Description

- Narration of the TV image content during dialogue pauses
- Separate sound channel (often listened to via headphones)
- Transported within in the broadcast signal, or
- Retrieved via the (mobile) broadband network (Internet)
  
- Challenge is to develop cost-effective yet high-quality production techniques

## Spoken Subtitles

- For people having problems to read text on screen, or cannot read fast enough (also for children)
- Transported within in the broadcast signal as separate sound stream, or produced in the TV set by synthesized voice (text-to-speech)
- Note: Speech synthesizing in TV sets becomes common place
  - CE manufacturers start offering “Voice Guidance” (Term used by Panasonic) in their TV sets
  - The users can speak to the TV set
  - The TV set speaks back to the user and can read out text

# Speaking Television (for all)

## Input by voice command (Example Android / Panasonic Vierra)



(1) Tap the voice command button

(2) Pronounce the word you want to input

(3) Select the word you want to input from the word list displayed

Source::  
Panasonic VIERA remote for Android.html

## Conclusions 1

- Whatever access service we offer, it will be of benefit to us all (sign language may be the only exception)
- The same way as accessibility services for people with disabilities (and for the elderly), additional services can be offered to all of us (background information, geographical data, text, graphics, audio, video, polls, games, etc.)
- Connected TV (Hybrid Broadcast-Broadband TV) is the marvellous new possibility for Multimedia Accessibility
- There is a need for cost-effective production techniques (semi-automated processes) but at the same time, there is a need for quality standards for access services

## Conclusions 2

- Make access systems mainstream
- Continue cooperation between content providers (e.g. broadcasters) and CE manufacturers
- Develop according applications for hybrid broadcast-broadband services
- Help broadcasters in developing countries to offer the additional services (to the benefit of all users)



# Thank you for your attention

Christoph Dosch

*Sincere thanks to Bettina Heidkamp, rbb and Klaus Merkel, IRT  
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